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Mr. Philip Olson
U.S. Department of Transportation
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Research and Special Programs Administration
400 Seventh Street, S.W., Room 8422
Washington, DC 20590-0001

Mr. Michael Stevens
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Mr. Danny Shelton
U.S. Department of Transportation
Office of Safety and Technology
Federal Motor Carrier Safety Administration
400 Seventh Street, S.W., Room 8422
Washington, DC 20590-0001

**RE: Docket No. RSPA-99-6223 (HM-213B)**
**Safety Requirements for External Product Piping on Cargo Tanks Transporting Flammable Liquids**

Dear Messrs. Olson, Stevens, Shelton:

The American Petroleum Institute (API) represents more than 400 member companies in all aspects of the petroleum industry. API members own petroleum terminals and truck and rail fleets for the distribution of asphalt, liquefied petroleum gases, gasoline, diesel fuel, heating oil, aviation (or jet) fuels, kerosene and crude oil. API has a continuing interest in the safe transportation of petroleum products on our nation's roads and our members appreciate the opportunity to offer comments on the above-referenced rulemaking entitled, "Safety Requirements for External Product Piping on Cargo Tanks Transporting Flammable Liquids".

In response to a National Transportation Safety Board (NTSB) recommendation (H-98-27), the Research and Special Programs Administration (RSPA) continues to evaluate the need for and

opportunities available to remove flammable liquid product from unprotected product piping (wetlines) on cargo tanks. Our members utilize MC-306 and DOT-406 cargo tanks for highway transportation of petroleum products and thus have a very direct and significant interest in this RSPA evaluation.

API believes that further regulatory action is not warranted. API completed a cost-benefit/risk analysis in 1994 and determined that the probability of a fatality being directly attributed to wetlines in a highway accident is quite low. Furthermore, the costs associated with regulating or banning the use of unprotected wetlines may disproportionately affect the petroleum industry. In fact, in the 1989 loading line rulemaking, RSPA concluded, " if the transportation of gasoline in external unprotected piping were prohibited, the impact on the petroleum industry could be substantial".

It is important to note that the rare accidents involving wetlines releases have primarily been caused by a passenger vehicle colliding with a cargo tank motor vehicle. In such accidents, fatalities may occur by the sheer impact of the passenger vehicle with the cargo tank motor vehicle, regardless of whether there is an ensuing wetlines release. In a August 8, 2001 letter from the Executive Office of the President, Office of Management and Budget (OMB) to the Department of Transportation (DOT), OMB encouraged DOT to closely examine whether the fatalities in question were directly attributed to the accidents themselves or from the fire resulting from the release of the flammable liquid from the wetlines. OMB stated, "it may be that these injuries and fatalities would not be avoided by a rule addressing wetlines. In fact, of the six fatalities that occurred from 1996-2000 as a result of wetlines related accidents, DOT acknowledges that two of these fatalities may have been caused by the accident itself". This is an additional vital issue in determining the need for additional regulatory action and is not addressed in this advanced notice of proposed rulemaking (ANPRM).

API is very concerned about any accident involving the transportation of petroleum products. The petroleum industry is proud of its impressive safety record and API maintains that accident prevention measures, most notably, more extensive driver training, remain the best approach to improving safety related to the use of the MC-306 and DOT-406 cargo tank.

In determining whether additional regulatory action is warranted, RSPA asked for comments on 37 questions; API's responses are as follows:

**A. General**

1. *Are the statistics and data (e.g., cargo tank population, useful life of a cargo tank, accident frequency and consequences), costs (e.g., purging system, short-loading lines, new construction, retrofit), and potential benefits (e.g., fatalities, injuries, and property damages prevented) provided in this ANPRM accurate?*

Although the data regarding cargo tanks appears accurate to API, we defer to the tank truck manufacturer and carrier organizations to confirm the accuracy of the data. Costs of the wetline purging system identified in the notice differ from our member company estimates totaling as much as $5,000 per trailer, which includes the associated hardware and installation costs.

In addition, cargo tanks would have to be cleaned and purged; the costs involved with keeping the vehicles out of service for several days must also be factored into this analysis.

2. *What is the useful life of a cargo tank motor vehicle utilized for the transportation of flammable liquids?*

API members on average, typically use a cargo tank between 5 and 12 years; however, it is not uncommon for a cargo tank to operate for 25 years.

3. *What percentage of cargo tank motor vehicles are operated at maximum weight limits such that any additional weight of a system to eliminate wetlines would impose a weight penalty?*

It is standard operating procedure to load cargo tanks to or close to the maximum allowable weight limits. Weight is a driving factor in the fuel distribution business. Equipment is designed to maximize the pay-load.

Every six pounds added is one gallon of gasoline that cannot be moved in that load. Assuming the new system, whatever that system is, weighs just 50 pounds, that means that each truck would not move eight gallons of fuel. Given there are about 40,000 deliveries a day, that is 40 extra trips per day throughout the country.

4. *For cargo tank motor vehicles in flammable liquid service, what is the average distance per trip?*

For API members transporting petroleum products via cargo tank, the approximate round-trip distance averages between 45 and 60 miles.

5. *In addition to the potential benefits described in this ANPRM, are there additional benefits, measurable or otherwise, that would result from implementation of measures to reduce wetlines risks?*

No.

6. *Should a benefit-cost analysis include the reduction of risks associated with low-frequency, high-consequence events?*

Yes. Because the primary purpose of a benefit-cost analysis is to estimate in monetary terms, what costs would be incurred in an effort to reduce a certain amount of risk, the frequency and potential magnitude of a particular event should be included in such an analysis. There may be an obvious safety benefit at some point in this analysis, but at what costs do those benefits drive regulation? This tool is used to assist agencies make regulatory decisions.

API would like to point out the effort by OMB to address issues associated with past and future risk and economic analyses conducted for regulatory purposes. OMB recently sought comments on the Draft 2003 Report to Congress on the Costs and Benefits of Federal Regulations, and the OMB Draft Guidelines for the Conduct of Regulatory Analysis and Format of Accounting Systems. 68 Fed. Reg. 5492 – 5527; February 3, 2003). OMB proposed requiring a cost-effectiveness analysis for all major rulemakings for which the primary benefits are improved

public health and safety. API supported this proposal in its comments. API also commented that a benefit-cost analysis should also be required for major health and safety rulemakings to the extent that valid monetary values can be assigned to the expected health and safety outcomes.

API believes that a cost-effectiveness analysis and a benefit-cost analysis should be completed before any additional regulatory action is taken in this rulemaking process. These analyses may facilitate consideration of more efficient ways to achieve a given safety benefit and may gauge the overall merit of any proposals and alternative regulatory options. Such analyses are certainly warranted given the magnitude of this rulemaking, where over 60,000 vehicles could incur costs of $5,000 per vehicle for retrofitting systems, resulting in an aggregate cost of over $300 million. (Please see comments below on cost per vehicle.) The cost is further increased by the costs associated with requiring systems for all newly constructed vehicles.

7. *Would requirements for systems to reduce the risk posed by wetlines for all newly constructed cargo tank motor vehicles result in significant reductions in per unit cost because of economies of scale?*

API does not believe so. The number of newly constructed cargo tanks would not be of sufficient magnitude to provide the benefits associated with economies of scale. In addition, the units are currently available from several suppliers and our members have not identified a significant reduction of costs if any new wetlines requirements only applied to new cargo tanks. API also believes that there would not be a significant reduction in per unit cost of systems required to retrofit those vehicles currently in service.

**B. Current Market Practices**

1. *What safety practices, other than those described in this ANPRM, are motor carriers currently utilizing to reduce the risks associated with the transportation of flammable liquids in wetlines?*

Public safety and the safety of our drivers are a top priority for API members. In addition to compliance with applicable hazardous materials transportation and safety regulations, a proactive approach in accident prevention, defensive driving training, is common for API member companies. API members invest a significant amount of time and resources training our drivers to avoid accidents. If they practice good defensive driving habits, the risk of an accident of any type is reduced. Additionally, member companies periodically check rides, by having safety specialists periodically board cargo tanks to evaluate the driver's and vehicle's performance. This safety measure is taken in an effort to reduce the risk of being involved in an accident.

2. *How effective are these safety practices in reducing the risks associated with wetlines on cargo tanks?*

The answer to this question can only be speculative because we have always had driver safety programs in place. However, API is proud of the industry's impressive safety history and performance of our drivers. While no studies have been done to assess the effectiveness of driver safety training, we believe that current safety practices effectively reduce the risks associated with wetlines. Each day the petroleum industry transports and purchasers consume

over 350 million gallons of gasoline and more than 150 million gallons of diesel and home heating oil, yet our cargo tanks are involved in extremely few accidents. We believe this industry-wide rigorous driver safety training substantially prevents accidents.

3. *What are the costs of these safety practices currently utilized?*

The petroleum industry devotes significant resources in driver training and other safety practices. One member company alone spends several hundred thousand dollars annually to provide driver training.

4. *Would an industry or industry/government sponsored research initiative to explore new methods to eliminate wetlines be of value?*

It depends. The industry is skeptical of the value a research initiative would provide at this stage in the evaluation of whether additional regulatory action is warranted to reduce wetlines incidents. API has studied whether gasoline or other petroleum products in the external loading/unloading lines of an MC-306 tank truck pose a significant risk to the public. DOT conducted its own benefit-cost and risk analysis released on January 25, 1999, "Prohibiting Hazardous Materials in External Piping of MC 306/ DOT 406 Cargo Tank Motor Vehicles". Both studies concluded that there is a small risk of a wetlines incident occurring, yet the cost of methods available to remove the loading lines of product is high.

Both DOT and industry stakeholders have been considering this issue for years. Safety is a top priority for API members and existing research and incident data have not led any member companies to determine that additional measures are warranted. If an initiative is to be successful, additional alternative methods first must be identified as at least potentially viable. Currently, there are two options under investigation – purging systems and short/recessed lines. Neither have a proven reliability and benefit-cost studies have not conclusively determined that they are needed.

As stated above, API believes that a cost-effectiveness analysis and a benefit-cost analysis are necessary before any further regulatory action is taken. If DOT decides to carry out such analyses, then industry should have the opportunity to provide input in the process. Not only is a cost effectiveness analysis necessary, but also a study must be performed on the actual effectiveness of the two options. In other words, a study is necessary to determine whether the systems involved in each option actually prevent releases from wetlines and eliminate the dangers. Such study would be extremely technical and very expensive.

5. *If so, what would be the value of such a partnership?*

Not applicable; see response to number 4 above.

**C. Facility Modification**

1. *Concerning the short and recessed loading lines systems described in this ANPRM, what modifications to loading arms or hoses at existing loading racks would be necessary to accommodate short, including recessed within the cargo tank wall, loading lines?*

The accommodation of short/recessed loading lines would involve a substantial re-design of the loading arms currently used.

Loading arms would need to be replaced because current arms would not likely reach the higher connection point on the truck. A major problem with this is that the loading area on the truck would be much longer, requiring the truck to be re-spotted to load all compartments (the connection points on the truck would be spread as much as 30 feet apart). This would have negative safety impact when loading because of the requirement to reposition the truck, sometimes involving backing up. In API Standard 2610, "Design, Construction, Operation, Maintenance, and Inspection of Terminal and Tank Facilities", it recommends that "when possible, the loading arms and hoses should be arranged to enable the filling of all tank compartments without having to move the vehicle, thus reducing the potential for accidents".

Average loading time would at least triple because of the need to move the truck and the limitation of using fewer arms to load with at a time (possibly one at a time instead of 2 to 3 at a time that is typical of current loading practices). If the lines enter the side of the compartment, there could be increased splashing, and concern for static ignition. When loading, low flow rates must be maintained until the fill opening in the compartment is submerged to avoid static ignition. The low flow portion of the batch would be much longer in duration, thereby increasing overall loading time. Longer loading times would reduce rack throughput capability, and require more lanes to be added to replace terminal loading capacity. Some terminals do not have the required land to add lanes.

Additionally, there are possible ergonomic considerations with this practice. Drivers would potentially be forced to attach loading arms in less accessible positions; this could lead to an increase in injuries.

2. *What would be the cost of these modifications?*

One company estimates that such rack modification could cost as much as $1 million per lane.

Another company estimates that it could cost the company approximately $5,250,000 using the following estimates and assumptions: 175 lanes, 6 arms per lane, $5000 each. This assumes the existing racks were designed with the space available to accomplish these modifications. The cost of building an additional lane to replace lost loading capability is about $1,500,000 each. Based on preliminary review, potentially 100 new lanes would be needed. This could cost another $150,000,000, if the land is available at the terminal to build the new lanes. Additional annual cost for ongoing terminal operations from reduced throughput capability and longer loading times is extremely difficult to project, but the estimates are easily in the millions, if not tens of millions, of dollars.

3. *Can loading rack fuel tax accounting systems be modified to allow for product reversal once the cargo tank is full and the internal valves are closed, thus draining the loading lines?*

This is of significant concern to us. How would the billing for the gasoline that is drained out of the wetlines work? How would the slop tank volumes be recorded? Additives and oxygenates

are added to the fuel at the rack. It is certainly possible that anything can be done with software and significant resource investments, but rack blenders would complicate the problem because additives are added at the rack and thus the fuels would not be allowed to go back into the supply tank but would likely go to the transmix tank and then returned to the refinery.

However, the tax accounting would be only one of the problems. Additionally, there would be the inventory loss on each load, the potential environmental exposure of handling product outside the normal containment systems on each load and the necessity to re-design the loading system since it is currently designed to manage product flow in only one direction.

4. *Is this option viable?*

We do not believe so. With rack blenders, there would be the problem of where to return the product. The blend specification would be impacted because this pumped back product is needed to complete the blend, and enable it to meet specifications. In many cases, it would need to go to the slop tank, resulting in an additional cost for the downgrade. There are also no pumps at the rack to push the product back to the tank. Of the two options discussed in this notice, purging would probably be more viable.

5. *What would such a modification cost?*

API members do not have cost-estimates. First, we would need to determine how this modification could be achieved, as it is currently not viable.

**D. Alternatives**

Independent Loading Lines

1. *Are the short and recessed loading lines options practicable for installation on new cargo tank motor vehicles?*

Even if short and recessed lines are only required on new cargo tanks, this option would still require modification of loading racks that would have to accommodate both types of cargo tank designs. In addition, if the lines enter the side of the compartment, there could be increased splashing and concern for static ignition. When loading, low flow rates would have to be maintained until the fill opening in the compartment is submerged to avoid static ignition. Therefore, the low flow period of the batch would be much longer in duration, greatly increasing loading time.

2. *Are either of these options practicable for installation on existing cargo tank motor vehicles (i.e., retrofit)?*

The static concern stated above would also apply to a retrofit scenario. Costs of retrofitting the cargo tank with short and recessed lines may be comparable to purging systems, but there are still the cost and operational issues to consider for the loading rack. Companies would have to retrofit cargo tanks at different times to enable the undisrupted supply of petroleum products. Terminals and truck fleets would not be able to accommodate this situation. It would be a major

disruption to a vital resource in our infrastructure. Trucks would be forced out of service for retrofits and companies would have to figure out how to stagger upgrades at terminals to minimize disruption. The static concerns, costs, delays and disruptions make this an unreasonable measure.

In addition, a substantial reengineering would be involved to ensure integrity and not compromise safety.

3. *Are there any motor carriers actively operating or contemplating operating cargo tank motor vehicles with such a design?*

There are no carriers currently operating with such a design. API member companies are not contemplating or aware of any carriers who are contemplating such a design.

4. *If so, what configuration was utilized and what was the cost to modify the cargo tank?*

Not applicable.

5. *Would maintaining a vehicle with such a design (i.e., independent loading lines) result in higher or lower costs than currently utilized designs?*

This is difficult to project since API members do not operate any cargo tanks or loading racks with this design. There could be additional costs involved due to the longer loading lines because a separate loading line would result in twice as many API adapters and caps, and thus be more expensive. There also would likely be inherent logistical and economic ramification involved in using and maintaining an additional type of vehicle in your fleet. However, API has no estimates available to give a precise answer.

<u>Purging System</u>

1. *How effective is a purging system in reducing the risks posed by wetlines?*

In theory, a properly operating purging system should be very effective since the lines under the equipment would be dry. However, we do not believe that current system designs have a failsafe device. If the system does not have a failsafe device that prevents the vehicle from moving when the lines are purged, then the system could be ignored. Another potential problem with purging systems could occur if a driver loads the cargo tank and then the wetlines will not purge due to a high alarm from the overfill device. As stated above, a study must be done on the effectiveness of purging systems in eliminating releases from wetlines. Moreover, a cost-effectiveness analysis and a benefit-cost analysis should be done before proceeding with a rulemaking requiring any type of system.

2. *Is a purging system practicable for installation on new cargo tank motor vehicles?*

Yes.

3. *Is a purging system practicable for installation on existing cargo tank motor vehicles (i.e., retrofit)?*

API does not support the retrofit of existing cargo tanks with purging systems. It would be a very complex, and potentially dangerous, task to retrofit existing cargo tanks. There are many questions that would need to be answered: What are the risks to the persons installing the retrofit kits? What are the dangers with cleaning and purging the tanks? What are the inherent risks if the system fails? The risks associated with the procedures involved in the retrofit must be factored into this decision to avoid transferring risk from one situation to another.

It is additionally not practicable because of the disruptions involved in pulling cargo tank motor vehicles from service for retrofitting.

4. *Are there any motor carriers actively operating or contemplating operating cargo tank motor vehicles with a purging system?*

API is aware that Sunoco has installed purging systems on its fleet. No API member company has installed or is contemplating installing this system.

5. *If so, what configuration is utilized (automatic, manual, other) and what was the cost to modify the cargo tank?*

DOT should refer to Sunoco for details on their purging systems.

6. *What are the costs to maintain a cargo tank motor vehicle with a purging system installed?*

Since API members are not operating any cargo tanks with this type of system, we do not have maintenance cost estimates available.

Conspicuity

1. *Would improved conspicuity for cargo tank motor vehicles generally, or wetlines in particular, reduce wetlines risks?*

We do not think improved visibility of cargo tank vehicles or wetlines would reduce accidents involving cargo tanks. It is our understanding that the accidents at issue were not the result of impaired visibility. Past incidents suggest that accidents involving wetlines have occurred because the driver of the other vehicle was unable to avoid running into the cargo tank truck, not because the driver was unable to avoid running into the loading lines.

2. *How effective would improved conspicuity be?*

Not very effective, since cargo tanks are already very large tank trucks, which are highly visible on the road. Additionally, cargo tanks carrying flammable liquids display very visible placards.

3. *Are there marking or lighting systems currently available that could improve the visibility of cargo tank motor vehicles or components of those vehicles to other drivers?*

In addition to the size of the vehicle and the DOT required placards, cargo tanks have conspicuity tape, decals, lights and reflectors. It is not clear to API how additional lights or other conspicuity device would have any additional beneficial effect.

Accident Damage Protection

1. *Are there cost-effective designs for accident damage or underride protection (e.g., guards), specification or otherwise, that would reduce the risks posed by unprotected product piping?*

There are designs that could protect the underside of the equipment. The problem with such designs is three-fold. First, most of the designs are not of sufficient strength to deflect a motor vehicle. Second, if a guard is designed with sufficient strength to repel a vehicle, the added weight of 1100-1200 pounds is prohibitive. Third, it is possible that the underride protection could puncture the skin of the tank, possibly resulting in a more significant spill.

2. *What would these designs cost?*

We conservatively estimate that the costs could run between $3,000 and $5,000 for the "light duty" protection (e.g., pedestrian, bicycle) and between $11,000 and $12,000 for the "heavy duty" protection (e.g., vehicle).

3. *What level of protection (i.e., impact forces sustained) would be both cost-effective and provide a significant reduction in risks associated with wetlines?*

API is unaware of any technological advances in accident damage protection that are both cost-effective and provide a significant reduction in risks associated with wetlines.

The Europeans have an under-ride protection standard as part of their vehicle specifications. However, the Europeans were able to obtain a higher weight standard in exchange for installing the under-ride protection. A cost-effectiveness analysis would first have to be performed, but due to weight limits in the U.S., this protection may not be appropriate.

Non-Regulatory

1. *Would a non-regulatory approach, such as an awareness campaign to alert the public as to the hazards posed by wetlines, be successful in helping to reduce the risks posed by wetlines?*

API does not believe that an awareness campaign would effectively reduce the risks posed by wetlines, because there are so few wetlines incidents and most wetlines incidents would likely occur regardless of whether the driver of the car was more aware of potential hazards posed by wetlines. However, DOT should provide further details on what an awareness campaign may include.

Other

1. *In addition to the purging and short-line systems described in this ANPRM, are there other systems currently being marketed or in development that can evacuate wetlines after loading or prevent wetlines from retaining liquid during loading operations?*

We are not aware of any other systems.

2. *What are the costs or projected costs of such systems?*

Not applicable.

*3. How effective are they?*

Not applicable.

*4. How close to implementation are systems currently in the development phase?*

Not applicable.

*5. Are there other concepts, either related to vehicles or facilities, that might have application in reducing the risks posed by wetlines?*

We are not aware of any.

Thank you for the opportunity to present these comments. API continues to believe that ongoing driver training, particularly defensive driving, and awareness programs provide the best protection against wetlines incidents.

API and its members stand ready to help the RSPA/FMCSA in this and all future efforts. If you have questions on any aspect of our comments or would like further explanations, please feel free to contact me at (202) 682-8482.

Sincerely,

Cindy Gordon